IN THE CLAIMS

Kindly amend claim 1 as shown in the following claim listing:

1. (currently amended) A sensor for measuring a magnetic field induced by a current of charged particles comprising at least two separated, mutually-insulated magneto resistive sensor elements for enclosing the magnetic field induced by the current of charged particles, the magneto resistive sensor ~~element~~ elements being arranged perpendicularly to the current during use.

2. (previously presented) The sensor as claimed in Claim 1, wherein the magneto resistive sensor elements have a circular shape.

3. (previously presented) The sensor as claimed in Claim 1 or 2, wherein the magneto resistive sensor elements are present on a flexible substrate.

4. (previously presented) The sensor as claimed in Claim 1 or 2, wherein the magneto resistive sensor elements are strips.

5. (previously presented) Sensor as claimed in Claim 1, wherein the magneto resistive sensor elements have a linear R(H) characteristic.

6. (previously presented) The sensor as claimed in claim 1 or 2, wherein magneto resistive sensor elements are arranged in a Wheatstone bridge configuration.

7. (original) The sensor as claimed in Claim 6, wherein two magneto resistive sensor elements of the Wheatstone bridge configuration are present on one side of the flexible substrate and the other two magneto resistive sensor elements are present on the other side of the flexible substrate.

8. (original) The sensor as claimed in Claim 7, wherein the two magneto resistive elements on one side of the flexible substrate have the same magnetization direction.

9. (original) The sensor as claimed in Claim 6, wherein a pair of two magneto resistive sensor elements of the Wheatstone bridge configuration has been stacked on top of the other pair of magneto resistive sensor elements, and between the two pairs an insulating material is present and a conductor is present for carrying the current of charged particles.

10. (previously presented) Method for measuring a current of charged particles using the sensor as claimed in claim 1 or 2, comprising the steps of:

- determining a change in resistance in the sensor according to the invention caused by a magnetic field induced by the current of charged particles,
- comparing the change in resistance with a reference characteristic of the sensor of the resistance versus magnetic field and determining the magnitude of the magnetic field,
- calculating the magnitude of the current from the magnitude of the magnetic field.

11. (original) Method as claimed in claimed 10, making use of the sensor according to claim 9, wherein a current is sent through a first conductor and a current having an opposite sign is sent through a second conductor positioned parallel to the first conductor for measuring a residual current.

12. (previously presented) A protective switch device for protecting a user of an electrical device by switching a supply current to the electric device off in case of malfunction of the electric device, comprising a sensor as claimed in claim 1 or 2, and further comprising:

- a comparator circuit comparing an output current or voltage of the current sensor with a reference current or voltage respectively, and

- a relay device switching the supply current dependent on the output current or voltage of the comparator circuit.